

REMARKS

35 USC §103

Claims 1, 3, 4, 6, 8 – 12 and 21 – 30 stand rejected as unpatentable over Iten or Lazarus in view of Ovorsky or Crawley.

Unitary Resin Body

All of the prior art references cited in both office actions teach precisely the type of problematic prior art device that the invention of the present application was designed to overcome. They share a common shortcoming. That is, in each of them each layer is individually fabricated and then the layers are fixed together. This necessarily creates a seam, interface or other discontinuity between layers in the finally assembled product.

All the prior references teach away from the non-obvious novelty of the present article claims for articles produced by the techniques disclosed. All the prior art references teach individual layer fabrication, followed by fixation of the various layers together. Moreover, none of them suggest that all layers be fiber and/or woven. Conversely in the pending claims, all layers are either fiber or woven (excepting of course the piezoelectric material) and are unitarily bound together by a vacuum injection of resin.

Therefore, any break of wire in the claimed article will not be an initial point for progressive crack propagation. An initial crack will not propagate in through the ductile resin matrix. Thus, especially in highly loaded structures, the lifetime of the electromechanical functional module according to the invention is increased.

In this regard, the transition region from the passive to the active area of the transducer is a particular problem. When prior art monolithic contact strips are used in the transition resin, the

contact strips are strained, resulting in fatigue and formation of cracks. The Lazars patent calls this out at column 7, line 22.

The solution in Lazarus is “sheets of stiff, strong polymer,” See column 3, line 28. This incomplete approach teaches away from the pending claims.

In between a crack, electric arcing causes the crack to progress, resulting in a complete breakdown of the transducer. This effect has been observed on actuators described in the U.S. Patent 5,420,819 B1 (Lazarus et. al.) which discussion is incorporated into the present application on page 3. This is also discussed in the present application on page 9.

This critical distinction is expressly recited in the original application on page 8 at lines 21-23, et seq. and further at page 10, lines 1-4. This sentence in the original German application describes the resulting product as “zusammenlaminiert.” The same German word is used in the original German article claim, claim 1. This German word is a combination of the form of the German word for laminate or laminated (“laminat”) or (“lamelliern”) and the German word “zusammen,” meaning “all together”, “common”, “continuous”, or “together.”

Claim 1 has been amended to recite that all of the layers are “in a unitary resin body.” This phrase clarifies the translation from the German. This structural recitation distinctly claims and particularly points out the hereinbefore discussed patentable structural distinction of the invention of the present application over all the cited prior art references.

Contact Strips Cover Electrodes

The Lazarus and other patents clearly disclose only partial coverage of the electrodes by the contact strips. Therein, these references clearly teach away from the structure recited on the pending claims.

Injection

With regard to claim 21, the article of manufacture claim includes as a final limitation, “a resin injected into the combination of the transducer, the upper and lower fiber cover layers and the fiber inter layer...” This limitation could not more precisely point out or more distinctly claim the exact nature of the non-obvious article feature produced by the process method supported in the application. If this is argued to be a “process limitation,” which applicant does not concede, claiming this article as such remains proper claim format.

Article claims are not indefinite simply because they include process limitations. *In re* Certain Steel Rod Treating Apparatus, 215 U.S.P.Q. (BNA) 237, 251 (Ct. Int’l Trade 1981); *In re* Brown and Saffer, 173 U.S.P.Q. (BNA) 685 (C.C.P.A. 1972) (“In order to be patentable, a product must be novel, useful and nonobvious. In our law, this is true whether the product is claimed by describing it, or by listing the process steps used to obtain it.”); *Ex parte* Clark and Summering, 174 U.S.P.Q. (BNA) 40 (Bd. App. 1971); *In re* Garner, 162 U.S.P.Q. (BNA) 221 (C.C.P.A. 1969); *In re* Pilkington, 162 U.S.P.Q. 145 (C.C.P.A. 1969). Moreover, to the extent such process limitations distinguish the article from the prior art, they must be given the same consideration relative to patentability as traditional limitations. The development of a new process, especially in the face of the previous unsuccessful efforts by others, is evidence of nonobviousness of the product eventually developed. *Phillips Petroleum Co. v. U.S. Steel Corp.*, 6 U.S.P.Q. 2d (BNA) 1065, 1096 (D.Del. 1987).

Applicant’s counsel further submits that it would be inequitable to reject claims drafted with the unitary limitation of claim 1 and simultaneously reject claim 21, reciting precisely the process step supported in the application. Both claims are allowable as stated over the prior art of record.

Conclusion

It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, he is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,



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